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Examining the trends and patterns of student retention in a fully online Postgraduate Diploma programme

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Abstract

This paper explores student retention in a fully online postgraduate public health programme, analysing retention trends, patterns, and contextual factors affecting adult students enrolled in online education at a South African public university. Advancements in information technology have expanded higher education opportunities through online education offerings. However, high dropout rates are an ongoing concern in online education. Employing a mixed-methods approach, this research collected quantitative data from 811 students across six cohorts and qualitative data from 126 students through purposive and convenience sampling. Findings show that online retention is comparable to face-to-face programmes, with high early attrition that stabilises over time. Key factors affecting retention include financial constraints, time management challenges, and social support levels. These results suggest that while online programmes can achieve retention rates similar to traditional settings, targeted strategies are essential to support non-traditional adult learners online.

Keywords: *Fully online degree programmes, mixed method, online education, student retenti on, student success.*

Introduction

In South Africa, access to public higher education in brick-and-mortar classroom settings is severely limited, as most universities have reached their maximum capacity to accommodate students into contact-based learning programmes (CHE, 2014). Contact-based programmes serve students who are able to attend on campus and follow fixed schedules. In response to growing demand and limited enrolment capacity, Fully Online Learning Programmes (FOLPs) have emerged as a viable alternative (CHE, 2014; Cooper et al., 2019). However, FOLPs face scrutiny over their ability to retain students and achieve high success rates. Academic progress, measured through retention and throughput rates, remains a key indicator of the efficiency of higher education systems. Conversely, non-completion signals systemic inefficiencies that have far-reaching implications for students, institutions, and governments (Thomas et al., 2021). High retention and throughput rates are vital for universities' financial sustainability and for enhancing individual economic opportunities and national productivity (Yorke & Longden, 2021; Stryzhak, 2020; Veshapidze et al., 2021).

Despite the benefits of educational attainment, the enrolment capacity constraints in South African public universities significantly limit access to higher education (CHE, 2014; Mohamedbhai, 2014). Traditional contact-based programmes often exclude non-traditional students who require greater flexibility to balance study with personal and professional responsibilities (Choi & Park, 2018; Kember, 1995; Moloney & Oakley, 2010; Treinienė, 2017; Xu & Xu, 2019). FOLPs present new opportunities for expanding access to higher education, with the potential to transition higher education from an elite system to a mass system (Ivancheva et. al, 2020).

Existing research has examined student retention in contact and traditional distance programmes through seminal frameworks such as Tinto's (1975) integration model, Bean's (1981) attrition model, and Kember's (1995) longitudinal process model. Previous studies have provided a comprehensive analysis of retention and its influencing factors in contact or traditional distance programmes. Contact programmes involve face-to-face, campus-based learning, while traditional distance education relies on self-directed study with limited interaction. However, Fully Online Learning Programmes (FOLPs) represent a relatively new educational format with unique characteristics that remain underexplored. FOLPs decouple contact-based learning from physical on-campus presence, and they are typically structured around a few modules at a time, offered in shorter cycles of 8 - 16 weeks. This presents a departure from the design of the traditional contact or distance programmes, which are structured as several modules that last for a semester or entire year. This innovation highlights critical knowledge gaps in understanding how retention manifests within this new programme design, which this paper addresses.

The transformative potential of FOLPs is evident in the public health programme examined. Its predecessor, a contact-based programme, enrolled only 85 students in two decades (2000–2019). In contrast, the online version attracted over 1,000 applicants in its first year (2020), with 811 actively enrolled in the programme. This significant increase demonstrates how FOLPs can expand educational opportunities and create a more inclusive higher education landscape. By offering accessibility, affordability, and flexibility, the public health FOLP expanded educational opportunities to a broader and more diverse audience, attracting demographics distinct from traditional students in contact-based programmes. This paper addresses the knowledge gap by analysing trends and patterns of retention among adult postgraduate

students enrolled in a FOLP at a South African university, along with pertinent contextual issues.

This paper adopts Kember's (1995) longitudinal-process model of student progress in open and distance education, which adapts the foundational work of Tinto and Bean. While those earlier models emphasise academic and social integration in campus-based settings, Kember reinterprets these for adult learners in distance education. His model frames dropout as a gradual process shaped by academic integration, social support, cost-benefit evaluations, and external attributions. It provides a good way to analyze how adult students in FOLPs deal with competing responsibilities and institutional challenges when deciding whether to continue or withdraw. In this paper, adult students' refers to those above the age of 25; the average age in the programme was 35. This framework is particularly suited to FOLPs, where students' persistence is often contingent on how well the programme aligns with students' multiple responsibilities, motivations, and available support systems. In this paper, Kember's model provides the conceptual foundation for analysing both the statistical patterns of retention and the qualitative experiences of students enrolled in a fully online postgraduate diploma in public health.

Literature Review

Online education, more so in the post-COVID-19 era, has experienced significant growth in enrolments, contrasting with the stagnation in traditional contact-based programmes (Detres et al., 2020). This growth signifies a paradigm shift driven by capacity constraints in contact-based education and increasing demand for flexible, accessible options. Students and institutions now embrace online learning to deliver effective, convenient, and inclusive experiences (Cooper et al., 2019; Goodman et al., 2019; Hachey et al., 2013; Tshabalala et al., 2016). For adult learners, online education offers a valuable opportunity to learn new skills or update old ones while balancing their work and familial responsibilities (Bawa, 2016). Despite advantages, online learning programmes face ongoing concerns about their ability to retain students, especially given the historically high dropout rates associated with distance learning. However, modern FOLPs integrate microlearning strategies and innovative programme design, which warrant closer examination of their effects on student retention and success. These

strategies may mitigate high attrition and low completion rates seen in traditional distance and early online provision models.

Defining student retention

Student retention in online programmes is perceived as challenging and a cause for concern (Ferdousi, 2016). However, there is often disagreement on the extent of student dropout in online environments as well as on defining key concepts such as dropout, attrition and retention. Student retention is context-dependent and shaped by perspectives and motives (Ashby, 2004). Hagedorn (2012, p. 2) states that "measuring student retention is complicated and context-dependent". Notwithstanding the current intensive focus on retention in the online environment, Cotton et al. (2017) suggest that the disparities in retention and success rates between various contexts hint at variations in policies and practices between institutions. Kember (1995), Seery et al. (2021), and Woodley et al., (2001) similarly contend that the generalisation of student rates is debatable, as the dropout rate differs between institutions and even between programmes in the same institution. This paper adopts the definition of Mouton et al. (2015), who define retention rate for each cohort as the sum of students in the cohort who are still actively registered plus those who completed their studies, relative to the initial cohort size.

Patterns of student retention and dropout from online courses

Dropout from higher education is typically higher in the early phases of the academic journey than in later stages (Bawa, 2016; Mabunda & Ntshoe, 2012; Panwar et al., 2025). The emergence of online distance learning is thought to be exacerbating the problem even further (Hachey et al., 2013; Kizilcec & Halawa, 2015). Bawa (2016) also asserts that online education accentuates the issue of chronically low retention rates in distance education. Student dropout in traditional distance learning and traditional contact mode programmes is more prevalent at the first-year academic level (Mabunda & Ntshoe, 2012). Similarly, student dropouts tend to be high in the early phases of online programmes compared to later stages (Bawa, 2016; Willging & Johnson, 2009). Rotar (2022) found that students who failed to complete the introductory module in an online programme often became despondent and discouraged from returning to the programme. According to Greenland

and Moore (2022), non-traditional students in online learning often discontinue studies after the introductory module and did not sign up for subsequent modules for subsequent modules. Greenland and Moore (2022) further pointed out that, in Australia, student dropout in online education was 2.5 times more likely than in contact-based programmes.

Factors that affect student retention in adult education and online education

The high student dropout rate in distance education is an ongoing concern, and online distance learning programmes inherit similar concerns (Ferdousi, 2016). While some view high attrition as indicative of failures, others advocate for a nuanced understanding of the distinct challenges faced by distance learning programmes and their students (Park & Choi, 2009; Simpson, 2013). Students often drop out not because of their academic skills, but because they are unable to cope with challenging circumstances (Hart, 2012). According to Kember (1989), institutional variables and personal, work, and family variables assume greater importance in understanding student retention in distance education. Institutional variables such as student support and guidance are often cited as reasons for dropping out of distance education or online programmes (Letseka & Karel, 2015). Student retention rates are also affected by personal reasons relating to their experiences in the study programme. In online programmes, negative experiences in the first modules prompt students to question their suitability for online learning and to introspect on their technological literacy (Willging and Johnson, 2009). Misconceptions and unrealistic expectations about the intensity of online programmes, including the course workload, time commitment, and intellectual rigour, often contribute to higher dropout rates (Bawa, 2016; Hart, 2012). Bawa (2016) further states that the absence of a familiar traditional classroom environment creates uncertainty for fully online students. Technological problems, environmental isolation and disconnectedness may also influence a student's decision to drop out (Park, 2007; Willging & Johnson, 2009).

Online education is highly valued for its convenience, enabling adult students to balance their work with their studies (Choi & Park, 2018). However, while employment provides the necessary funding and relevant work experience, it also poses a risk to academic success, as there can be conflicts between job demands and study requirements (Kocsis & Pusztai, 2020). Time constraints are a significant factor affecting student

retention; students often prioritise work over academic tasks, which leads to postponed studies and increased dropout rates (Meyer et al., 2009; Kocsis & Pusztai, 2020). Financial constraints also frequently lead to dropouts. In the South African context, these challenges are compounded by unfavourable economic conditions and high unemployment rates, making higher education appealing for its potential return on investment yet simultaneously unaffordable due to high tuition fees and limited funding options for non-traditional students (Kimmel et al., 2012; Gurgand et al., 2011).

Research Questions

This paper examines the manifestation of student retention in the first six cohorts that enrolled for the fully online Postgraduate Diploma in Public Health between 2020 and 2022 at a public university in South Africa. Research questions, aimed at addressing the purpose of the study, were formulated as follows:

- What are the trends and patterns of student retention in the fully online postgraduate programme?
- How do contextual factors pertinent to adult students affect their retention in the fully online postgraduate programme?

Methods

Pedagogical Setting and Participants

This paper reports on a study conducted at a South African public university, focusing on student retention within a fully online postgraduate diploma programme in public health. To explore retention trends and patterns, we employed a combination of purposive and convenience sampling methods.

Purposive Sampling: A purposive sampling method was applied, using the total population sampling technique, to stratify the student cohorts and study the trends and patterns of retention in each cohort. The total population sampling technique is a purposive sampling method that includes every population member who meets the inclusion criteria for the study (Etikan et al., 2016). Using this technique, we included all 811 students registered in at least one module of the study programme,

except those who dropped out during the provisional registration period, classified as non-starters. This approach allowed for a comprehensive analysis of retention across different student cohorts. Students were organised into six cohort groups, and enrolment data were collected from the Student Information System (SIS).

Convenience Sampling: For qualitative insights into how contextual factors influenced retention, we used convenience sampling to collect data via a questionnaire adapted from Kember's (1995) Distance Education Student Progress Inventory. The questionnaire included both Likert-scale and open-ended questions. Additionally, purposive sampling was specifically applied to include students who had dropped out, providing qualitative data on the contextual issues that influenced their decisions to leave the programme. Of the total population (N=811) included in the quantitative component, n=126 students voluntarily participated in the qualitative survey.

Design of the Study

This study adopts an explanatory sequential mixed-methods approach (Creswell & Creswell, 2018), employing an ex post facto non-experimental case study design (Cohen et al., 2018; Silva, 2012) to examine the trends and patterns of student retention and using a qualitative case study design (Creswell & Creswell, 2018; Maree, 2018) to understand how contextual factors affected student retention. An ex post facto non-experimental case study design allowed for a retrospective examination of the enrollment data for patterns and changes in student enrolment and retention, and this was appropriate for both ethical and practical reasons. This method is appropriate when you cannot collect data before an event happens or when it's unacceptable to manipulate the events (Cohen et al., 2018; Silva, 2012). A qualitative case study design was preferred to develop a contextual understanding of the relevant qualitative aspects in this specific study context.

Data collection and analysis

The study investigates student retention rates using a mixed-methods approach. Quantitative data on student enrolments were extracted from the Student Information System (SIS) employing the total population sampling technique and analysed using time-series trend analysis. This

phase quantifies changes over time in enrollment patterns, and these changes are crucial for understanding and depicting the trends of student retention. Following the quantitative analysis, qualitative data were collected through open-ended questions adapted from Kember's (1995) DESP questionnaire, providing deeper insights into student experiences and perspectives.

The study adopts Mouton et al.'s (2015) methodological conception of student retention to distinguish between students who have remained enrolled and those who have dropped out and to further calculate the rate. The cohort retention rate is the proportion of students still registered plus those who have completed their studies, relative to the original cohort size, and is represented by the formula:

Where:
= the retention rate of a specific student cohort during a selected period (specified by i)
= the number of students, from the cohort above, who are active students in the study programme during the selected period (i)
= the number of students, from the cohort above, who had already completed the study programme by period i
= the initial cohort size

Qualitative data were linked to enrolment records using student identity numbers (SIN), which were later replaced with pseudo-codes. Pseudocodes of students who dropped out were prefixed with the letter 'D' before the identifier (e.g., student D7), and those who were retained were prefixed with the letter 'R' before the identifier (e.g., student R35). A content analysis method was used to systematically code open-ended responses, clustering them into themes and conceptual categories to identify the patterns and relationships between variables (Given, 2008). The method focused on organising and categorising the qualitative data using a coding process (Given, 2008; Maree, 2018).

Results

Trends and patterns of student retention

The time-series trend analysis method was used to plot the trends and monitor changes in student retention for each cohort, and the results are shown in Figure 1.

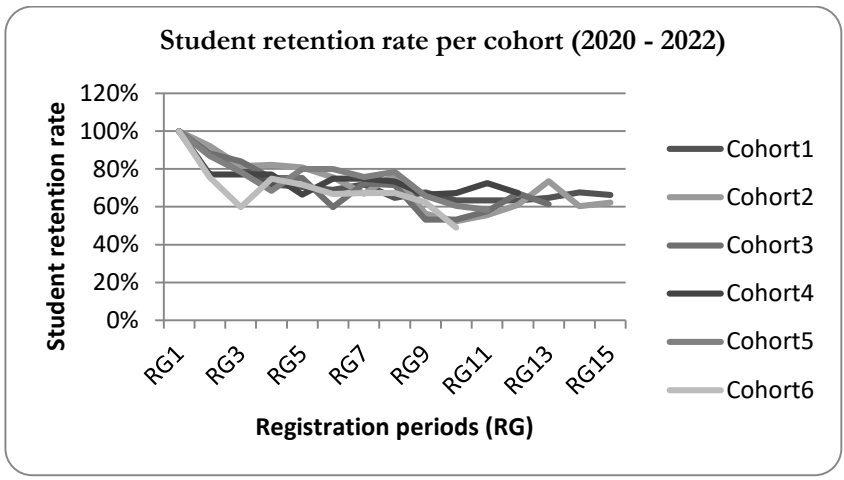
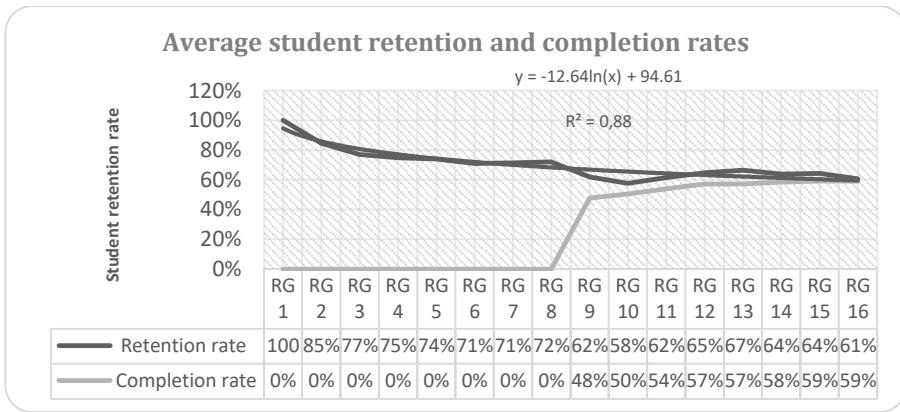


Figure 1: *The actual trends and patterns in student retention for each of the six cohorts included in this study*

Figure 1 illustrates a consistent trend in student retention across different cohorts, with only slight variations in retention rates. Student retention in fully online programmes fluctuates due to factors such as students dropping out or stepping out and re-enrollments after having stepped out. Figure 2 presents the central tendency of these retention patterns from an institutional perspective and highlights the completion rates within the programme.



	RG 1	RG 2	RG 3	RG 4	RG 5	RG 6	RG 7	RG 8	RG 9	RG 10	RG 11	RG 12	RG 13	RG 14	RG 15	RG 16
Retention rate	100	85%	77%	75%	74%	71%	71%	72%	62%	58%	62%	65%	67%	64%	64%	61%
Completion rate	0%	0%	0%	0%	0%	0%	0%	0%	48%	50%	54%	57%	57%	58%	59%	59%

Figure 2: *Average student retention rate and completion rates in the fully online programme*

Figure 2 depicts the average student retention trendline, demonstrating that retention rates within the minimum study duration of the

programme follow a logarithmic pattern. Student dropout occurs in two distinct phases: an initial acute phase at the beginning of the programme and a subsequent moderate phase starting from the third module and continuing to the end of the minimum study duration. Specifically, 15% of students drop out in the first module, with a cumulative 27% dropout rate during this acute phase. In the moderate phase, retention rates stabilise between 71% and 77%. The regression equation below could approximate the logarithmic relationship between student retention rate and the number of enrollment periods.

$$y = -12.64I(X) + 94.61$$
$$= 0.88$$

Where (y) = the estimated student retention rate (x) is the number of enrolments since a cohort began their studies.

Logarithmic regression models are well-suited for phenomena exhibiting initial rapid growth or attrition, followed by a reduction in the rate of change while maintaining the same direction. The coefficient of determination is a statistical measure that assesses how well the model predicts the actual data by indicating the goodness of fit. In this case, a high value of 0.88 not only suggests a strong associative relationship between the retention rate (dependent variable) and the duration in the programme (independent variable) but also indicates that 88% of the variability in the retention rate can be explained by the number of enrollment periods.

Critical periods of student dropouts

Identification of the critical periods sought to understand where and when student dropout was most prevalent. The time-series trendlines in Figures 2 and 3 depicted a two-phased logarithmic pattern of student dropout. The study sought to evaluate the statistical significance of the observation by examining the differences in student retention rates between the programme's first module and the subsequent ones. A research sub-question was formulated as follows and added to examine the phenomenon:

Is there a statistically significant difference in the retention rates of module 1 (fixed at the start of the programme) compared to other modules in the programme?

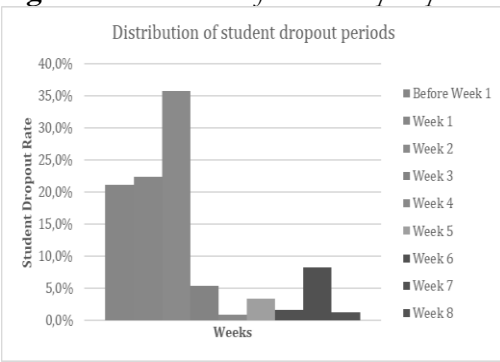
H0: There is no significant difference in the retention rate of module 1 compared to the other modules.
H1: There is a significant difference in the retention rate of module 1 compared to the other modules.

Module 1	Retention rate (%) in Module 1	Module 2–9	Retention rate (%) in Module 2–9
PHM710_EC_2020	88%	SCM710_ED_2020	97%
PHM710_ED_2020	93%	HCM710_EE_2020	92%
PHM710_EE_2020	91%	CDC710_EF_2020	98%
PHM710_EF_2020	96%	EHM710_EA_2021	97%
PHM710_EA_2021	89%	HME710_EB_2021	95%
PHM710_EB_2021	90%	HME711_EC_2021	97%
PHM710_EC_2021	89%	AHM710_EK_2021	100%
		HME712_ED_2021	98%

Table 1: *Student retention rate in each module*

The Mann-Whitney test was used to determine if there was a statistically significant difference in retention differences between the two module categories. The calculated u-value for the dataset was 3, with a p-value of 0.00452, significantly lower than the critical value of 10 at $p<0.05$ (where $n1=7$ and $n2=8$). The null hypothesis was rejected based on these results, confirming a higher dropout rate at the beginning of the programme compared to subsequent modules. Furthermore, deregistration dates sourced from enrollment data were analysed to identify specific dropout periods, categorised by weeks according to the weekly structure of the modules. Figure 3, which visualises these data, reveals that 79% of students who dropped out did so within the first two weeks of their enrolled module. This analysis highlights critical early intervention points to enhance student retention strategies.

Figure 3: *Distribution of student dropout periods*



Contextual issues that influenced student dropout

The following primary themes were identified:

Time management and competing responsibilities

Many students cited difficulties in balancing work, family obligations, and study. Students often dropped out or were disengaged academically because they lacked time due to demanding work schedules or caregiving responsibilities.

Financial constraints

Students frequently pointed to affordability challenges, particularly around tuition fees and lack of financial support. Economic pressures, including job loss or lack of funding, led some to withdraw from their studies.

Institutional support and communication

The quality of institutional support, particularly the responsiveness of staff and clarity of communication, was highlighted as a key determinant of student persistence. Positive experiences fostered a sense of connection, while negative experiences exacerbated feelings of isolation.

Social and emotional support

Students who had support from family, peers, or employers tended to persist, while those who felt isolated or unsupported emotionally were more likely to withdraw. Emotional exhaustion and lack of motivation were cited as barriers to completion.

Technological and academic challenges

Difficulties with the online learning management system, limited digital literacy, and unreliable internet access posed significant challenges to continuing with studies. For some, these challenges triggered self-doubt or frustration, affecting their academic progress.

Discussion

This paper examined trends and patterns in retention in a fully online postgraduate programme and how they were affected by contextual issues.

Patterns of student retention and dropout

An analysis of student retention phenomena through time-series trend analysis in this study revealed a two-phased logarithmic pattern of dropout. The computation of a trend line provides a hint regarding the possible future of the retention rates; however, the expectations hold only to the extent that the same variables which produced the observed trend maintain their behaviour in the future (Richmond, 1964). Nevertheless, the general behavioural pattern of student dropout tends to remain stable within institutions despite the minor variations between cohorts (Mangum et al., 2005; Seery et al., 2021). The study identified entrenched retention patterns, characterised by a high initial dropout rate that stabilises in subsequent phases of the programme. This pattern is supported by statistical differences in retention rates between the first module and subsequent ones ($p=0.00452$), aligning with findings by Bawa (2016) and Kember (1995), which suggest early programme stages are critical for dropout. Approximately a quarter of students enrolled between January 2020 and June 2021 dropped out in the first module, reflecting observations by Aulck et al. (2016) that about 30% of new online students do not continue their studies. However, the likelihood of students dropping out decreases as their duration within the programme increases, suggesting a stabilisation of retention rates over time. Retention in this public health FOLP was comparable to, and sometimes better than, traditional face-to-face postgraduate programmes, where dropout rates typically range between 30% and 67% in South Africa (Styger et al., 2014; Mouton et al., 2015).

This study found a significant prevalence of dropouts within the first two weeks of module commencement, with 79% of dropouts occurring during this period, mirroring Simpson's (2013) findings. Simpson (2013, p. 110) found that "78% of the dropouts from the Open University UK degree occurred not only in the first module but quite early in that module". High student dropout rates during the provisional registration period are not a new phenomenon in distance learning. The reasons for early dropout include dissatisfaction with the learning experience, challenges in adapting to online environments, and financial constraints, leading to deregistration or non-payment of fees. Willging and Johnson (2009) and McCoy and Byrne (2017) further suggest that early dropouts are influenced by a lack of relevance in the curriculum and discrepancies between expectations and actual experiences.

How contextual issues influence student retention

This study found that demographic variables such as marital status were not correlated with retention, but other factors, including parental and spousal responsibilities, had a clear impact. Students who had more than one child or who lived with a spouse exhibited a higher dropout rate. Economic factors also played a significant role: part-time or unemployed students, as well as those facing financial difficulties, were more likely to leave the programme. Additionally, 41% of those who dropped out cited financial issues preventing them from completing registration, often due to the inability to pay tuition fees on time.

Motivational factors, social support, programme evaluation, and time management significantly influenced retention. For instance, students who struggled to balance work, family, and educational commitments tended to drop out, particularly if they lacked adequate support from family, colleagues, or employers. Moreover, the learning strategies employed by students impacted their retention decisions; those who engaged in shallow learning techniques like memorisation were more likely to drop out compared to those applying deeper learning strategies. Negative perceptions of the learning management system (LMS), assessment quality, and the overall educational experience also contributed to dropout decisions.

Interestingly, while intrinsic motivation is often considered a strong driver for enrolling in online studies (González, 2015) and for adopting deep learning strategies (Everaert et al., 2017; Kember 1995), this study found that students who dropped out were predominantly motivated by

intrinsic factors but tended to use less effective learning strategies. In contrast, students motivated by extrinsic factors, such as career advancement opportunities, were more likely to persist, viewing the qualification as a valuable asset for external rewards. Students with a longer work history also showed a higher dropout rate, possibly because their job security reduced the perceived benefits of acquiring additional qualifications. This suggests that retention strategies should also consider aligning programme outcomes with the students' career and personal goals.

Conclusion

This paper investigated student retention in a fully online postgraduate programme, examining both the trends in retention rates and the impact of various contextual factors affecting adult learners. The study employed an explanatory sequential mixed-method design, combining an ex post facto design in studying quantitative aspects and a case study design to examine the qualitative aspects. The quantitative analysis showed that retention rates drop significantly in the initial stages of enrolment, underscoring the need for targeted interventions to support new students. The regression equation also serves as an effective tool for forecasting retention rates, which assists in strategic planning and resource allocation.

The findings demonstrate that retention rates in fully online programmes are comparable and sometimes better than those in traditional face-to-face settings. This stability in the trends and patterns of retention rates enables institutions to proactively address the factors that contribute to dropout. Specifically, the entrenched patterns emphasise the need to adapt policies and practices to better support students at the start of their educational journey.

The findings of this study also indicate that the novelty of fully online programmes requires adjustments in policy and funding mechanisms to better cater to the unique needs of non-traditional, adult learners. The concurrent timing of the COVID-19 pandemic may have further influenced student enrolment and retention patterns, which points to the need for continued research to disentangle these effects in a post-pandemic context. Such research would ideally refine retention strategies and policy frameworks, ensuring they remain responsive to the evolving landscape of online higher education.

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